

Amendments to the Claims

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims

What I claim is:

1. (Canceled) A digital transmission system comprising:
 - a. a transmitter transmitting a transmit symbol sequence that has been created by multiplying an input symbol sequence by a transmission matrix, said transmission matrix being comprised of non-orthogonal basis functions;
 - b. a signal path,
 - c. a receiver receiving a received symbol sequence, and
 - d. a processing element multiplying the received symbol sequence by a recovery matrix, said recovery matrix is an inverse of the transmission matrix, whereby an output symbol sequence is produced.
2. (Canceled) A digital transmission system according to claim 1, wherein the transmission matrix is square.
3. (Currently Amended) A digital transmission system comprising:
 - a. a transmitter transmitting a transmit symbol sequence that has been created scrambled by multiplying an input symbol sequence by an over-determined transmission matrix, said transmission matrix being comprised of ~~nonorthogonal~~ non-orthogonal basis functions;
 - b. a signal path,
 - c. a receiver receiving a received symbol sequence, and
 - d. a processing element multiplying the received symbol sequence by a recovery matrix, said recovery matrix is a pseudo-inverse of the transmission matrix, whereby ~~an a~~ a descrambled output symbol sequence is produced.
4. (Canceled)
5. (Currently Amended) A digital transmission system according to claim 3, wherein the processing element removes ~~redundant~~ corrupt symbols in the received symbol sequence and ~~a~~ said

recovery matrix is created from the pseudo-inverse of the transmission matrix modified by ~~corrupted~~ corrupt terms symbols in the received symbol sequence.

6. (Currently Amended) A digital transmission system comprising:
 - a. a transmitter transmitting a transmit symbol sequence that has been ~~created~~ scrambled by multiplying an input symbol sequence by a transmission matrix comprised of non-orthogonal basis functions and performing an inverse fast Fourier transform ~~in~~ on the result;
 - b. a signal path,
 - c. a receiver receiving a received symbol sequence, and
 - d. a processing element performing a fast Fourier transform and multiplying the received symbol sequence by a recovery matrix, said recovery matrix is ~~a~~ a pseudo-inverse of the transmission matrix, whereby ~~an~~ a descrambled output symbol sequence is produced.
7. (Original) A digital transmission system according to claim 6, wherein a guard interval is added to the transmit symbol sequence.
8. (Currently Amended) A digital transmission system according to claim 6, wherein the processing element removes corrupt symbols and said recovery matrix is created from the pseudo-inverse of the transmission matrix modified by corrupt symbols in the received symbol sequence.
- 9 (New) A digital transmission system according to claim 5, wherein said recovery matrix is created from an inverse of the transmission matrix modified by corrupt symbols in the received symbol sequence
10. (New) A digital transmission system according to claim 8, wherein said recovery matrix is an inverse of the transmission matrix.